

10/514196

REPLACED L.  
ART 34 AMDT

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CLAIMS

1. A cutter comprising a Ni-Cr alloy containing from 32 to 44 mass percent of Cr,  
from 2.3 to 6 mass percent of Al, the balance being Ni, impurities, and additional  
5 trace elements and having a Rockwell C hardness of 52 or more.

2. The cutter according to claim 1, wherein the Ni-Cr alloy is nonmagnetic.

3. The cutter according to claim 1, wherein the chromium is partly replaced with at  
10 least one element selected from Zr, Hf, V, Ta, Mo, W and Nb, the total replacement  
ratio of Zr, Hf, V and Nb is one mass percent or less, the replacement ratio of Ta is  
two mass percent or less, and the total replacement ratio of Mo and W is 10 mass  
percent or less.

15 4. The cutter according to claim 3, wherein the total replacement ratio of a plurality  
of the elements represented by a formula  $(Zr+Hf+V+Nb) \times 10 + Ta \times 5 + (Mo+W)$  is 10  
mass percent or less, wherein the name of elements Zr, Hf, Ta, Mo, W and Nb  
represents the replacement ratio of each element, the elements partly replacing the  
chromium.

20 5. The cutter according to claim 1 or claim 4, wherein the aluminum is partly  
replaced with 1.2 mass percent or less of Ti.

6. The cutter according to any one of claims 1 to 5, wherein the nickel is partly  
25 replaced with 5 mass percent or less of Fe.

7. The cutter according to any one of claims 1 to 6, wherein the Ni-Cr alloy comprises:

0.1 mass percent or less of C;

0.05 mass percent or less of Mn;

0.005 mass percent or less of P;

0.005 mass percent or less of O;

0.003 mass percent or less of S;

0.02 mass percent or less of Cu; and

0.05 mass percent or less of Si; as the impurities and the additional trace elements,

the total content of P, O, and S is 0.01 mass percent or less, and the total content of Mn, Cu, and Si is 0.05 mass percent or less.

8. The cutter according to any one of claims 1 to 7, wherein the Ni-Cr alloy comprises:

0.025 mass percent or less of Mg;

0.02 mass percent or less of Ca;

0.03 mass percent or less of B; and

0.02 mass percent or less of rare earth elements including Y; as the impurities and the additional trace elements, and

the total content of Mg, Ca, and B is 0.03 mass percent or less (but when the total content of Mg, Ca, and B is 0.015 mass percent or more, the total content of P, O, and S is 0.003 mass percent or less and the total content of Mn, Cu and Si is 0.03 mass percent or less).

9. The cutter according to any one of claims 1 to 8, characterized in that the Ni-Cr

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alloy comprises a texture wherein three phases including an  $\alpha$  phase that is a Cr-rich phase, a  $\gamma$  phase that is a Ni-rich phase, and a  $\gamma'$  phase that is an intermetallic compound phase composed of  $\text{Ni}_3\text{Al}$  as the basic composition are mixed.

- 5      10. The cutter according to any one of claims 1 to 9, wherein the Ni-Cr alloy has an average grain size of 1 mm or less.